

ENHANCING ENVIRONMENTAL SUSTAINABILITY USING PUBLIC ADMINISTRATION TOOLS: CHALLENGES AND STRATEGIES

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Abstract: This paper provides a comprehensive analysis of the intricate interplay between public administration and environmental sustainability. Emphasizing the crucial role of public administrations at both local and national levels, the study explores innovative approaches to combat environmental challenges. At the local level, the research focuses on Barcelona as a case study, delving into the city's groundbreaking Urban Mobility Plan. The unique implementation of the superblocks concept showcases effective strategies for reducing pollution, promoting sustainable mobility, and fostering overall environmental well-being. On a national scale, the paper delves into legislative frameworks and strategies formulated by public administrations to address environmental issues. It underscores the necessity of coherent policies that align with international standards, taking into account the global nature of environmental challenges. By exploring diverse strategies at different governance levels, the paper contributes nuanced insights into the challenges and opportunities faced by public administrations in their quest to enhance environmental sustainability. The findings not only underscore the critical role of public administration in tackling environmental issues but also provide valuable insights for shaping future policies and initiatives.

Keywords: Public Administration, Environmental Sustainability, Public Policy

Introduction

In an era marked by escalating environmental concerns, the imperative task for public administrations to deal with environmental sustainability issues has never been more pressing. This paper delves into the intricate interplay between two pivotal realms—Environmental Sustainability and Public Administration—within the dynamic context of the European Union. As the global community grapples with the ever-escalating consequences of climate change, both local and central administrations have a central role, formulating and implementing strategies to reduce emissions and fortify environmental sustainability. In the face of widespread challenges posed by climate change, there must be a balance between formulating and implementing legal documents and maintaining the economic growth, balance heavily influenced by the constant population growth (Sadigov, 2022).

Theoretical framework

Although pollution represents a natural phenomenon, air, water and soil has seen in recent times an exponential growth that manages to disrupt the mankind's wellbeing. We can state that, on an international level, the phenomenon of pollution gained momentum with the period of the industrial revolution in the first half of the 19th century (Heim, Schwarzbauer, 2013). An important factor for which we can affirm that pollution intensifies concurrently with the onset of industrialization is the exponential growth of the population, currently

having a global population that exceeds 8 billion (United Nations Department of Economic and Social Affairs, 2022). This was achieved through the gradual replacement of manual labor by machinery and the revolutionization of medicine, resulting in a significant increase in both infant mortality rates and life expectancy (Esmaeilzadeh et al., 2021). We can also assert that there was not a single invention that launched the industrial revolution along with its detrimental effects on the environment. Instead, the multitude of achievements from the early 18th century to the present has placed both the environment and the human component in the current precarious situation."

A legislative balance for managing pollutants of any nature is necessary for the well-being of citizens. In this situation, one of the most important global intergovernmental mechanisms addressing terrestrial ecosystems, freshwater, coasts, and seas directly is the "Global Action Programme" conducted by the United Nations Environment Department. It was established in 1995 when over 108 governments declared their commitment to preserving and protecting the marine environment from the impact of terrestrial activities. The subject of environmental sustainability has ramifications in almost every aspect of our daily lives, one important element being our economy. According to a study conducted by the World Bank Group entitled "The Cost of Air Pollution," "exposure to pollution cost the global economy \$5.11 trillion in welfare losses." (The World Bank and Institute for Health Metrics and Evaluation, 2016). In broader terms, welfare losses in South Asia and East Asia and the Pacific were equivalent to 7.4% and 7.5% of the regional gross domestic product (GDP), respectively. At the lowest level, losses were still equal to 2.2% of GDP in the Middle East and North Africa. Pollution resulting from the combustion of solid fuels was the primary cause of losses in South Asia and Sub-Saharan Africa. In all other regions, damages were largely caused by ambient air pollution from fine particulate matter (PM 2.5).

According to this report, "approximately 87% of the world's population lives in areas that exceed air quality standards set by the World Health Organization, which, for fine particulate matter, should average no more than 10 micrograms per cubic meter annually.

" Although the mortality rate correlated with exposure to fine particulate matter smaller than 2.5 micrometers (PM2.5) by age has decreased in most countries from 1990 to the present due to health improvements, population growth, and increased exposure to these substances, new health risks have increased the number of premature deaths.

For example, from 1990 to 2013, premature mortality caused by air pollutant factors, specifically PM2.5, increased by 30%, from 2.2 million deaths to 2.9 million deaths annually. These statistics can be explained by the exponential growth of the population from 1990, which was approximately 5.3 billion people until 2013 when the global population reached around 7.2 billion inhabitants. Thus, we can talk about a population increase of approximately 26.5% in a relatively short period. If this upward trend continues, the population's needs for sustainable development will require an exponential exploitation of natural resources. When the demand for resources exceeds the supply, the environment will suffer, attempting alternative options with destructive long-term effects.

Environmental sustainability challenges and strategies

As part of the ongoing effort to protect the environment, the measures implemented collectively in this regard by both the public administration and private actors yield the desired effects only when correlated with each other. Thus, we can analyze legal efforts at

the local, national, and international levels, having in mind that the private actors are responsible to respect these legal efforts. We will be analyzing different strategies to enhance environmental sustainability, both from the national and the local level so we understand the unique challenges and opportunities of both of them.

Due to stringent legislation at the European Union level regarding air quality and the fact that, large areas of the city did not meet these criteria, the first Urban Mobility Plan of Barcelona 2013-2018 was enacted. This plan is based on Catalan Parliament Law 9/2003, aiming to integrate urban and economic development with mobility policies, public transportation, and efficient transport systems. It promotes intermodality, adapts transport systems to meet the needs of low-density population areas, alleviates urban congestion, enhances road safety, and reduces pollution as much as possible. The Urban Mobility Plan has four major objectives, each with specified desired achievements. These objectives are: Safety of Mobility: Aiming to reduce the number of accidents associated with mobility by 20% in the case of severe injuries and by 30% in the case of fatalities compared to the year 2012.

Equity in Mobility: Aiming to ensure accessibility to the mobility system and encourage the use of alternatives found on public roads, with the ultimate goal of halving waiting times for buses.

Efficiency of Mobility: Aiming to optimize the transport system and incorporate new technologies in mobility management.

Sustainable Mobility: This is the most developed objective, with the final goal of complying with regulations in all seven data collection stations. It aims to facilitate the transition to more sustainable modes, reduce air and noise pollution from transportation, moderate energy consumption in transportation, reduce its contribution to climate change, and increase the proportion of renewable energy and "clean" energy consumption.

The concept underlying Barcelona's Urban Mobility Plan is called "superblocks" (initially termed "superilles"). This concept is unique due to its approach to pedestrian zones. Unlike typical pedestrian areas found only in city centers, this concept transforms groups of around 9 buildings into pedestrian zones reserved for cyclists, resident cars, urban service vehicles, and emergency vehicles. By reducing the number of cars in a specific area, the economic effects can be reconsidered as citizens are encouraged to walk more.

On a national level, there are quite a few unique challenges that need to be approached from different points of view so that we are enhancing environmental sustainability. Air pollution represents a major issue for the public administration, especially when on an international level there is no consensus on how to manage it. Motor vehicle taxation in the European Union represents an area of interest for both policy makers and environmental experts. There is no general framework designed at the E.U. level, so, each country designs its own taxation framework. The most common type of taxation is based on CO₂ emissions, and is implemented in two key moments, on acquisition and during the ownership of the vehicle (European Automobile Manufacturers Association, 2020).

For this case study we will focus on Denmark, being one of the most performing countries in terms of CO₂ emissions (Runkel et al., 2018) that has a different approach to motor vehicle taxation, relying on fuel consumption instead of the CO₂ emissions. It uses a system that correlate to both CO₂ emissions and fuel consumption, using the reasoning that the more you fuel up, the more fossil fuel you burn, the more you pollute. The two taxation methods are implemented by using the following methodology:

The Green vehicle tax depends on the type of fuel used (diesel or petrol) and on the official fuel consumption indicated by the manufacturer and it's designed for "private cars (excluding buses) first registered in Denmark between 1 July 1997 and 30 June 2021, and for vans first registered in Denmark during the period between 18 March 2009 and 30 June 2021."

The CO2 vehicle tax depends on the CO2 emissions (measured in grams per kilometre) indicated by the manufacturer and it "must be paid for private cars and vans (excluding buses) first registered on or after 1 July 2021"

This article proposes a mixt approach from a motor vehicle taxation point of view. The public administration can implement a taxation method based on multiple elements so that the "polluter pays principle" will be ethical and efficient. The method this article proposes a new formula that will take into account the following elements:

The number of kilometers driven annually (A)

The Euro Emission Standard (B)

The CO2 emissions indicated by the manufacturer (C)

The official mixt fuel consumption indicated by the manufacturer (D)

The number of kilometers and the official mixt fuel consumption gives us the reasonable quantity of fuel burned, the Euro Emission Standard could be used as a risk index, older cars usually being more likely to have problems that affect the emissions and the CO2 emissions indicated by the manufacturer gives us a baseline on how much that car will pollute on average. All this data can be gathered from the national car registry and be implemented on a national scale so there aren't disparities on a local level.

At the county and municipal levels, through the subsidiarity principle, Romania and especially Bucharest should implement policies and plans that can be adopted to bring areas in line with the standards set by national and European legislation. An example of such a plan is the Integrated Air Quality Plan in Bucharest for the period 2018-2022. This plan aims to maintain pollutant levels within the values imposed by Law 104/2011, regulating nitrogen oxides, suspended particles, both PM10 and PM2.5, as well as benzene (Bucharest City Hall, 2018). Within this plan, characteristics, natural sources, anthropogenic sources, health effects, and environmental impacts are analyzed for all the aforementioned pollutants.

Conclusions

In conclusion, the paper "Enhancing Environmental Sustainability Using Public Administration Tools: Challenges and Strategies" underscores the pivotal role of public administration in addressing the pressing environmental concerns of our time. Through a comprehensive exploration of both local and national levels, the study illuminates the intricate relationship between public administration and environmental sustainability. The analysis of Barcelona's Urban Mobility Plan, with its innovative superblocks concept, exemplifies the efficacy of localized strategies in promoting sustainable urban living. This underscores the importance of tailored approaches that address unique challenges within specific communities.

On a broader scale, the examination of national strategies emphasizes the need for cohesive policies that consider international standards, economic dynamics, and population growth. Striking a balance between legislative frameworks, economic development, and

environmental conservation emerges as a complex yet imperative task for public administrations.

The findings of this study contribute valuable insights for policymakers, highlighting the diverse strategies that can be employed to enhance environmental sustainability. By recognizing the unique challenges faced at different governance levels, public administrations can craft informed policies and initiatives that resonate with the global imperative of creating a balanced and sustainable future. As we navigate the complexities of environmental stewardship, this research serves as a call to action for collaborative efforts, emphasizing the crucial role of public administration in shaping a resilient and environmentally conscious society.

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